this death was accidental, the woman being in ignorance of her condition and police inquiries having failed to reveal the possibility of interference by any third party.

It is of course accepted that air embolism may occur when an attempt is made to inject air or fluid, or both, through the cervix with the object of producing an abortion. There are three cases on record in which therapeutic vaginal insufflation during pregnancy had resulted in death from air embolism. So far as can be ascertained, however, there is no previous report of an instance in which simple vaginal douching led to air embolism from detachment of the placenta.

This case is one of pure pulmonary air embolism. The finding of the patent foramen ovale at once raised the possibility that air would be found in the cerebral vessels also. Presumably the valvular nature of the very slight septal defect prevented this.

Summary

The causes of air embolism are reviewed and the mechanism of death due to this condition is discussed.

A case of accidental death from air embolism due to vaginal douching during pregnancy is recorded.

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ACTIVE CONVALESCENCE OF HERNIAL REPAIRS

BY

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During investigations into the causes of the high incidence of post-operative respiratory complications in Service cases it was shown that the incidence and intensity of symptoms were lessened in those cases specially liable by early movement and, in particular, by getting up out of bed. The type of case with the highest incidence was the group of hernial repairs and to a lesser extent appendicectomies. It was therefore determined to get all these men up the next day after operation, and the consent of the consulting surgeon of the Command was obtained to take a course of action contrary to the usual practice and contrary to the instructions later issued in the *Army Medical Bulletin*.

At the beginning of this investigation various operations were used—viz., Bassini, simple removal of sac, fascial graft, and finally the slide repair as described by Tanner (1942). As the series went on the operation of choice became the simple removal of sac, and the value of this decision was later emphasized by the survey given by Maj.-Gen. Max Page (1943) and others at the Royal Society of Medicine, which had not been published when this step was taken.

It has generally been agreed that the results of operations are not as satisfactory when a thorough investigation is made as is the impression of many surgeons who have not kept strict figures. Various critical reports have shown a recurrence rate between 0 and 20%, but among the most valuable published figures are those of St. Thomas's Hospital of 12% (1943).

The cases described have been an unselected series in men of military age. The great majority of them have been indirect inguinal herniae. Direct herniae have been operated upon only when there is evidence of a funicular sac coming down into the scrotum. Those with only a diffuse bulge have been advised against operation, as it is felt that the likelihood of strangulation is negligible. Nevertheless, some errors of diagnosis were made earlier in this series.

Many factors are involved in producing successful results, and in all probability no one factor is paramount. Much stress has been laid on the type of operation, but probably the truth is that no one type will meet all conditions and that a certain number of recurrences are the result of a faulty choice of operation.

There are several recognized factors of importance, of which some are the care of adequate haemostasis, strict aseptic technique, and the removal of the whole sac as far back as the "corn" which marks the position of the neck of the sac. I deprecate the use of gauze dissection as a means of separating the sac, though some have argued that good results follow the formation of a firm mass of inflammatory scar tissue. This, however, will certainly stretch under strain in a way normal tissue will not.

The great value of the Tanner slide operation where the inguinal ring is much enlarged is that the action of the arcuate fibres of the internal oblique is not interfered with. If their attachment to the conjoined tendon is slackened before suture their direction of pull remains normal. The hernial ring is closed against intra-abdominal pressure by the constriction of the arcuate fibres of the internal oblique, which, in contracting between its two attachments on Poupart's ligament and the conjoined tendon, flatten the arch, approximating the top of the arch to Poupart's ligament. It is essential that this muscular mechanism should be maintained in good activity. Therefore every opportunity must be taken, by free movements of the patients, to prevent adhesions forming between the internal and the external oblique. This is a matter of great importance, seeing that the likelihood of respiratory complications is so high. The strain placed on the inguinal canal by coughing is considerable, and it is apparent that anyone who could cough and vomit after operation certainly could sit in a chair without any increased risk and with greater comfort.

There is much difference of opinion in regard to the choice of suture material, and there are responsible advocates for the use of catgut or of more permanent sutures such as silk or linen thread. In this series I have used catgut throughout. Floss silk, so enthusiastically described by Maingot (1941), has not been employed at all, for I have had through my hands three cases of prolonged sepsis and sinus formation after the use of this material. Whether thread or catgut is chosen is probably a matter of no great importance so long as strict aseptic precautions are maintained. The post-operative dressing which has been used as a routine has been a thin layer of gauze stuck on healthy skin by mastisol. This has been done to avoid the inevitable moisture from sweating which is present when both elastoplast and bulky wool and bandage dressings are employed.

In the previous article (Martin *et al.*, 1943) we demonstrated that the choice of anaesthetic is a matter of little importance. I feel that the choice of an anaesthetist is of far greater moment. The only break with convention has been in the after-care. Active convalescence has been found to be of value in many conditions, and is practicable after herniotomies and appendicectomies when a muscle-splitting operation has been done. It has been found to accelerate recovery in bronchitis, pneumonia, and even carditis, where functional activity, carefully graduated, enhances convalescence. The scope of this form of convalescence has proved to be far more practicable than we imagined a few years ago. Hospitals with enthusiastic rehabilitation departments have demonstrated the value of this form of treatment.

The routine of activity that these men are encouraged to accept is as follows:

On the first day after operation they get out of bed and walk a few steps to a low armchair. They find they could sit in greater comfort than in bed and that the greater flexion of the hips helps to support the inguinal canal so that they can cough with less strain. They are allowed to sit up as long as they enjoy it. On

the next day they get up for two similar periods, and are told that they may walk to the lavatory if they want to. Not many avail themselves of this permission until the third day. From that time they are told that they may do anything that they can do, and are up the greater part of the day. Many play billiards, help with light ward duties, and walk about the grounds. They are given no specific exercises until the eighth day, when they are transferred to J.W.O. Convalescent Hospital, and begin graduated physical training with a sergeant instructor. An interesting side-light has come from the nursing staff, who are able to predict with a fair degree of accuracy which patients will have post-operative respiratory complications before operation has taken place. They have noted that the anxious, miserable, worried, unhappy patients who are afraid of hurting themselves will get respiratory complications, while the happy active type will succeed in avoiding them. This point has also been noted by Lucas (1944). If it should be thought that this regime is unduly rigorous the details of the recovery of my daughter, who had a simple herniotomy done, may be of interest. She followed this routine exactly, and had been told from the outset that she might do anything that she was able to do so long as it did not hurt. She got out of bed readily after 24 hours and was walking with confidence on the third day. She left hospital on the eighth day and travelled by train across Britain. From that time she was running about with her brothers and swimming from a beach one and a half miles from home. On the fourteenth day she turned six cartwheels in succession without any hesitation or thought of having recently had an operation. She went back to school without any complaint.

It is notoriously difficult to follow up Service cases, but a questionnaire has been sent out to 200 consecutive cases one year after operation, and reports have been received from 123. Among these there have been 8 recurrences—i.e., 6.5%. Among the remainder, information is given that many of them are serving over-seas, and it may be assumed that recurrences had not occurred among these men—at any rate before they sailed. Of the rest it is fair to assume that those who have a recurrence or are in any way disabled are more likely to answer questions than those who are quite well. Answers have been received from every battlefield where British troops are engaged. It would appear that a routine of early activity has not increased the recurrence rate.

Summary of Conclusions

1. The rate of recurrence of operations for inguinal hernia is higher than is often realized.
2. Early activity is not a factor leading to recurrence.

My thanks are due to the Director-General, E.M.S., for permission to publish this report.

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Medical Memoranda

A Case of Locked Twins

The following case of locked twins appears to be unusual enough to warrant publication.

The patient, a secundipara aged 30, was seen by me several times during her pregnancy for routine antenatal examination. Her last normal menstrual period was from May 24 to 28, 1943, but she had a further period of vaginal bleeding from July 18 to 22 before she consulted me. This made it difficult to estimate the correct date for the expected confinement, but according to the size of the uterus it appeared that she was due to be confined about March 15—i.e., four weeks earlier than the actual labour. At my last consultation on the expected date, March 15, I informed the patient of the possibility of twins, owing to the large size of the abdomen and the difficulty of ascertaining the foetal position.

On April 17 at 3.30 a.m. the waters broke, and at 9.30 a.m. she started getting weak pains. Towards 7 p.m. the midwife made a rectal examination and thought she felt a foot presenting through the fully dilated cervix. I confirmed this finding, with a further rectal examination at 7.15 p.m., and, to the right of the foot, felt what I took to be the half-breech. The patient was bearing down strongly with good five-minute pains. On abdominal examination no definite positions could be distinguished, as foetal parts could be felt everywhere, and in the left flank there was an ovoid mass which the midwife insisted was a head, but this was subsequently disproved. One foetal heart was heard in the right flank below the umbilicus, and another in the left flank at the level of the umbilicus. The difference in rate between the two was not enough to be significant. A diagnosis of twins was made, and I anticipated no

trouble. However, after about an hour the pains became weaker and less frequent, and there was no apparent progress. The patient showed signs of exhaustion, and at about 9 p.m. I decided to make a vaginal examination to find out what was holding up the progress of labour. I found a leg lying in the vagina, and could feel along the leg as far as the mid-thigh; but, to my surprise, lying to right of the leg was a head covered by a bag of membranes, and it was apparent that the head of the one twin and the half-breech of the other had entered the pelvis together and become locked. What I had taken for the buttock, on rectal examination, was now disclosed as the second head covered by a "bag of waters." The latter bag of membranes, incidentally, was formed by a fold of membrane being caught between the two twins, as we subsequently found only one placenta and chorion.

I sent for the aid of Dr. David Gamsu, and under deep ether anaesthesia he pushed the presenting head up out of the pelvis with his vaginal hand and held it up with his external hand. We thereupon pulled the half-breech of the other twin down and delivered this twin as a breech presentation. The infant was a female weighing 5 lb. 3 oz. and, like its sister, exhibited only slight blue asphyxia. Delivery was complete at about 10.30 p.m., a single placenta being born about 30 minutes after the second foetus, and the post-partum haemorrhage was normal in amount.

The puerperium was normal, and the patient got up on the 10th day, both babies doing very well. The case appears to be interesting because of (a) the comparative rarity of locked twins—the usual incidence given being 1 in 90,000 pregnancies; (b) the unusual method of locking.

I am indebted to Dr. D. Gamsu for the delivery of a difficult case and his help with these notes.

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Quinsy, complicated by Deep Pharyngeal Thrombosis, Multiple Infarcts of the Lungs, and Myocarditis

Quinsy appears to be a fairly common complaint among Service personnel, but the complications in this case are unusual and should be of interest to readers. I am unable to find a similar case in the literature.

CASE RECORD

On July 15, 1943, a W.A.A.F. was admitted to hospital as a case of diphtheria. On the previous day she was admitted to the R.A.F. sick bay complaining of nausea, vomiting, sore throat, and general malaise; temperature 101°, pulse 84. The throat was inflamed and there was exudate on both tonsils. The temperature rose to 105° despite tepid sponging.

On admission the patient was ill and extremely pale. Examination showed: no oral fetor; right cervical adenitis and right tonsillar gland acutely tender; throat very inflamed, with gross oedema of right tonsil; right anterior faucial pillar pushed well forward; left tonsil much less involved; no membrane; stream of pus down post-pharyngeal wall coming from the right tonsil. The condition was characteristic of quinsy with good drainage. Swab H.S. and K.L.B. negative; Schick test negative. Course of sulph-anilamide started. Patient developed a swinging temperature, 102°, 104°, to 97°; trismus. Pulse septicaemic in type.

July 17.—Despite the fact that the throat condition improved, the patient became much worse and developed a fine tremor of the left leg.

July 19.—Pulse septicaemic—very full and bounding. Extremely toxic; rigors. Temperature 104°, but throat condition improved and oedema well reduced. Patient's manner very strange. Resistant to examination. Quinsy still draining. W.B.C., 9,884 per c.mm. On July 20 sulph-anilamide was stopped: total 14 g.

July 21.—Condition deteriorated. Rigors; profuse sweats; quinsy almost resolved, but temperature continued to swing—102°, 104°. Tremor of left leg continued. Liver palpable 1/2 in. below costal margin. W.B.C., 29,952. A radiograph of the chest revealed some fluffy densities in the right upper zone; the right diaphragm was raised and flat, and the illumination of the right lower zone was poor. Diagnosis: thrombosis of pharyngeal plexus involving the veins close to the internal jugular vein. Sulphapyridine begun.

July 23.—Blood culture positive for non-haemolytic streptococci. Patient complained of pain in right side of neck. A tender swelling felt in the region of the right jugular vein. W.B.C., 23,000.

July 26.—Large tender mass palpable along right jugular vein just above the level of the tonsillar gland. Palatal and right tonsillar oedema; stream of pus coming from the old quinsy opening. Next day a transfusion of one pint of fresh blood was given. Sulphapyridine was stopped on July 29: total 40 g.

July 30.—Acute left-sided pleurisy. Dyspnoea well marked; very slight haemoptysis. The neck condition improved—not tender; a hard knotty mass about 3/4 in. long palpable along the jugular chain. Quinsy dry. W.B.C., 14,040. A course of sulphadiazine started on Aug. 2.

Aug. 3.—Dry unproductive cough with pain in the left chest. Crepitations ++ left lower lobe. Throat tender; some pus again leaking from quinsy. X rays showed massive density in the right upper zone laterally and densities in the right middle and lower zones. The appearances were not like a tuberculous lesion and were compatible with infarcts.

Aug. 4.—Sulphadiazine stopped: total 25 g. Sulphapyridine started. E.C.G. showed gross myocarditis. Between Aug. 23 and 30 the patient had three attacks of pleural rub.